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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/764,852	01/26/2004	Michio Tanimoto	2004-2123.ORI	9801

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EXAMINER

CHO, JENNIFER Y

ART UNIT	PAPER NUMBER
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1621

MAIL DATE	DELIVERY MODE
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01/31/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/764,852

Applicant(s)

TANIMOTO ET AL.

Examiner

Jennifer Y. Cho

Art Unit

1621

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 October 2007.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2-4 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 2-4 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Detailed Action

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 1/9/08 has been entered.

Claims 2-4 are pending in this application. Claim 1 has been cancelled.

Response to Arguments

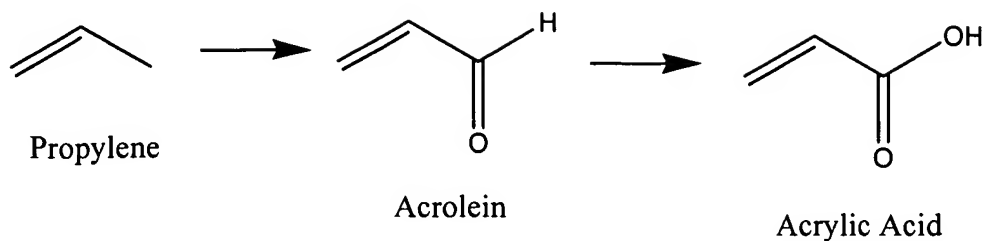
Applicant's arguments are moot in view of the new grounds of rejection.

Claim Rejections – 35 USC 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawajiri et al. (US 5,719,318), in view of Brockwell et al. (US 6,492,548), further in view of Chaturvedi et al. (US 2002/0065431).



Kawajiri et al. teaches a process for production of acrylic acid by carrying out a catalytic gas phase oxidation reaction of acrolein with molecular oxygen to produce acrylic acid, in the presence of a composite-oxide catalyst, which includes molybdenum, vanadium, tungsten, copper, iron, antimony, tin, titanium and zirconium (column 2, lines 15-41), meeting the limitations for Applicant's composite-oxide catalyst.

Kawajiri et al. also teaches that the composite-oxide catalyst is packed into a fixed-bed multitubular reactor, in which the process includes the steps of dividing the inside of each reaction tube of the reactor in a tubular axial direction to form at least two reaction zones and then packing these reaction zones with the composite-oxide catalyst particles so that the amounts of the constituents decreases from the gas-inlet side of each reaction tube toward its gas-outlet side (column 2, lines 15-30).

Kawajiri et al. goes on to say that "the catalyst particles used in the present invention can be produced by any of various processes ordinarily used in production of such catalyst particles...the starting materials used in production of the catalyst particles are not particularly restricted..." (column 2, lines 56-58). Kawajiri et al. also teaches that "the temperature of hot spots in catalyst layers can be kept lower and the reaction can be conducted more uniformly in all catalyst layers: as a result, there is no local

deterioration or damage of catalyst and an extended catalyst life is obtained.” (column 5, lines 35-39).

Kawajiri et al. is deficient in that it does not teach the production of acrolein by oxidation of propylene with a composite-oxide catalyst that includes both molybdenum and bismuth using an acrylic acid absorbing column and an inert saturated hydrocarbon. Kawajiri et al. is also deficient in that it does not explicitly state the catalyst is made from a catalyst precursor.

Brockwell et al. teaches a process for production of acrylic acid from the oxidation of propylene using a fixed-bed, tubular-flow reactor to form acrolein (column 6, lines 29-31), in which the mixed gas contains a high-concentration of propylene (column 5, lines 26-27), oxygen (column 5, lines 28-29) and an unreactive inert saturated hydrocarbon gases, e.g. methane, ethane, propane (column 4, lines 35-43), but does not have to contain steam (column 5, line 40; column 3, lines 16-17), including a catalyst which includes molybdenum and bismuth (column 4, lines 64-66). The resulting acrolein gas is further oxidized to acrylic acid using a composite-oxide catalyst which includes molybdenum and vanadium (column 6, lines 35-40). The acrylic acid can further be recovered by absorption (column 7, lines 11-14).

Brockwell et al. is deficient in that it does not explicitly state the catalyst is made from a catalyst precursor.

Chaturvedi et al. teaches a process for the production of acrylic acid from the oxidation of propylene, in which acrolein is formed as an intermediate (abstract; page 1, section 14, lines 4-7; page 7, section 104, lines 1-2 and line 9). The catalyst used for

the reaction is a mixed metal oxide containing Mo, W, V, Sb, Nv, Ti, Al, Fe, Co, Ni, Bi, Sn, Pb and Cu (page 3, section 45 and 46), in which a catalyst precursor is formed containing Mo, V, Fe, Co, Ni, Bi, Ni and Pb (page 3, section 54-58), meeting Applicant's limitations for the catalyst and catalyst precursor.

Therefore it would be prima facie obvious to one of ordinary skill in the art at the time of the invention, to use the two step process of Brockwell et al. in the oxidation of propylene to form acrylic acid, instead of the single step process of Kawajiri et al. to oxidize acrolein to form acrylic acid, along with using Chaturvedi et al.'s catalyst precursor for the catalyst supply source. One of ordinary skill in the art would be motivated to combine these references, with the reasonable expectation that catalyst activity and the overall yield of the product would be enhanced. The expected result would be the efficient oxidation of propylene to first acrolein and then to acrylic acid, as the final product, in high yield.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer Y. Cho whose telephone number is (571) 272 6246. The examiner can normally be reached on 9 AM - 6 PM.

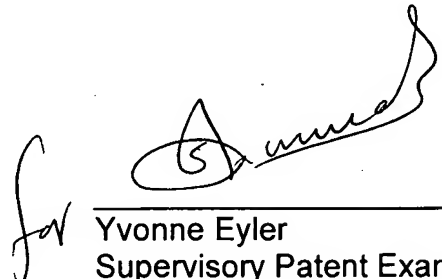
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Yvonne Eyler can be reached on (571) 272 0871. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Jennifer Cho
Patent Examiner
Art Unit: 1621



for Yvonne Eyler
Supervisory Patent Examiner
Technology Center 1600